SEMESTER END EXAMINATION APRIL-MAY, 2026

Course Name:- B Tech **Semester:-** IV

Paper Name:- Operating System **Paper Code:** NCS 401

Time - 3 Hrs + 20 minutes per hour extra time for V.I. & examinees with writer. **Max Marks-70**

Instructions:

- The question paper consists of three sections namely A, B, C. All sections are compulsory.
- Section A- Each question carries **3 mark**. **All questions are compulsory**.
- Section B- Answer any **5 out of 7** given questions. Each question carries **7 marks**.
- Section C- Answer any **2 out of 3** given questions. Each question carries **10 marks**.

Section – A
Multiple Choice Questions

1. Answer all the following questions. 5x3 =15

i) Which scheduling algorithm may cause starvation.
   a) FCFS
   b) FIFO
   c) SJF
   d) Round Robin

ii) What is the full form of PCB.
   a) Program control block
   b) Process control block
   c) Process communication block
   d) Program code block

iii) Deadlock occurs.
   a) All the processes wait indefinitely for resources.
   b) CPU is idle
   c) Only one process is running
   d) Memory is full

iv) Paging is used for
   a) Process scheduling
   b) Memory Management
   c) File management
   d) Deadlock handing

v) Which page replacement algorithm gives the best performance.
   a) FIFO
   b) LRU
   c) Optimal
   d) Random

Section – B
Short Answer Questions

2. Answer any five of the following questions. 5x7=35

i. Explain **segmentation** and compare with paging.

ii. What is virtual memory? Explain demand paging.

iii. Reference string:
   1, 3, 0, 3, 5, 6, 3
   Frames = 3
   Find page faults using **FIFO**.

iv.

Process	Arrival	Burst
P1	0	8
P2	1	4
P3	2	2

Find:

Completion time of each process
Find Average waiting time using **SRTF**

v.

Process	Burst Time	AT
P1	10	0
P2	5	0
P3	8	0

Time Quantum = 2
Find:

- Gantt Chart
- Average Waiting Time

vi. Logical address ~~space~~ = 32-bit
Page size = 4 KB
Find:

- Number of pages
- Bits for page number & offset

vii. Numerical (TLB):
TLB access time = 10 ns
Memory access time = 100 ns
Hit ratio = 80%
Find **Effective Memory Access Time (EMAT)**.

Section – C
Descriptive Questions

3. Answer any two of the following question. 2x10=20

i) Explain different **process states** and draw the process state transition diagram.
ii) Explain **paging** with address translation mechanism and diagram.

iii) Explain belady's anomaly with regard to page replacement algorithm
Compare page replacement algorithms:

- FIFO
- LRU
- Optimal

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